

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of the Claims

1-16. (Cancelled)

17. (Original) A connector for use in making a hollow anastomotic connection between a first aperture in a side wall defined by first and second ends of a tubular graft tissue conduit and a second aperture in a side wall defined by first and second ends of a tubular body tissue conduit in a patient, the connector comprising:

a structure that is substantially annularly continuous but annularly enlargeable about its longitudinal axis, the structure including:

a first portion, wherein the first portion includes a plurality of first members extending away from the structure, wherein a distal perimeter is defined by at least a first group of the plurality of first members configured to engage the interior wall of the body tissue conduit about the second aperture, and wherein a second group of the plurality of first members is configured to engage the graft tissue conduit about the first aperture; and

a second portion proximal to the first group of first members, wherein a first spacing is defined between at least the first group of first members and the second portion, and wherein the structure is configured to expand from a deformed configuration having a collapsed distal perimeter to an expanded configuration having an expanded distal perimeter.

18. (Original) The connector defined in claim 17, wherein the first and second groups of first members are substantially radially aligned with respect to a common axis.

19. (Original) The connector defined in claim 18, wherein the first members of the first group extend distally away from the first portion of the structure and wherein the first members of the second group extend proximally away from the first portion of the structure.

20. (Original) The connector defined in claim 19, wherein each of the first members of the first group has a hook with a sharp end portion for engaging tissue of the interior wall of the body tissue conduit.

21. (Original) The connector defined in claim 20, wherein each of the first members of the second group has a hook with a sharp end portion for engaging tissue of the interior wall of the graft tissue conduit.

22. (Currently Amended) The connector defined in claim 18, wherein the first group of first members at least includes the second group of first members so that the first group of first members is configured to engage both the graft tissue conduit about the first aperture and the interior wall of the body tissue conduit about the second aperture, so that tissue of the graft tissue conduit can extend from within the lumen of the body tissue conduit to outside of the body tissue conduit, and so that body fluid of the patient can flow between the lumen of the graft tissue conduit and the lumen of the body tissue conduit via the connection.

23. (Original) The connector defined in claim 22, wherein each of the first members of the first group has a barbed end portion.

24. (Original) A connector for use in making a hollow anastomotic connection between a first aperture in a side wall defined by first and second ends of a tubular graft tissue conduit and a second aperture in a side wall defined by first and second ends of a tubular body tissue conduit in a patient, the connector comprising:

a hollow structure that is substantially annularly continuous but annularly enlargeable about its longitudinal axis and configured for disposition substantially perpendicular to the longitudinal axis of the tubular graft conduit and the tubular body conduit, the structure including:

a distal axial portion, wherein a plurality of first members extend away from the distal axial portion in an annular array that is substantially concentric with the structure, wherein a distal perimeter is defined by at least a first group of the plurality of first members configured to engage the interior wall of the body tissue conduit about the second aperture, and wherein a second group of the plurality of first members is configured to engage the graft tissue conduit about the first aperture;

a proximal axial portion, wherein a proximal perimeter is defined by a plurality of second members of the proximal axial portion configured to engage the exterior wall of the body tissue conduit about the second aperture; and

a medial axial portion between the distal axial portion and the proximal axial portion, wherein an axial spacing is defined between at least the first group of first members and the plurality of second members, and wherein the structure is configured to expand from a deformed configuration having a collapsed distal

perimeter and a first axial spacing to an expanded configuration having an expanded distal perimeter and a second axial spacing.

25. (Original) The connector defined in claim 24, wherein the medial axial portion is configured to extend in a first direction along the exterior of the graft tissue conduit about the first aperture substantially perpendicular to the longitudinal axis of the graft tissue conduit.

26. (Original) The connector defined in claim 24, wherein the distal axial portion is configured to receive tissue of the graft tissue conduit about the first aperture extending up through the hollow interior of the structure in a direction substantially perpendicular to the longitudinal axis of the graft tissue conduit.

27. (Original) The connector defined in claim 24, wherein the collapsed distal perimeter is smaller than the perimeter of the second aperture.

28. (Original) The connector defined in claim 24, wherein the second axial spacing is smaller than the first axial spacing.

29. (Original) The connector defined in claim 24, wherein at least the first group of first members and the plurality of second members are configured to resiliently press the graft tissue conduit and the body tissue conduit into annular contact with one another annularly around the first and second apertures.

30. (Original) The connector defined in claim 24, wherein the second axial spacing is substantially equal to the sum of the wall thickness of the graft tissue conduit and the wall thickness of the body tissue conduit.

31. (Original) The connector defined in claim 24, wherein the first and second groups of first members are substantially radially aligned with respect to the longitudinal axis of the structure.

32. (Original) The connector defined in claim 31, wherein the first members of the first group extend distally away from the proximal axial portion of the structure and wherein the first members of the second group extend proximally toward the proximal axial portion of the structure.

33. (Original) The connector defined in claim 32, wherein each of the first members of the first group has a hook with a sharp end portion for engaging tissue of the interior wall of the body tissue conduit.

34. (Original) The connector defined in claim 32, wherein each of the first members of the second group has a hook with a sharp end portion for engaging tissue of the interior wall of the graft tissue conduit.

35. (Original) The connector defined in claim 31, wherein the first group of first members at least includes the second group of first members so that the first group of first members is configured to engage both the graft tissue conduit about the first aperture and the interior wall of the body tissue conduit about the second aperture, so that tissue of the graft tissue conduit can extend from within the lumen the body tissue conduit to outside of the body tissue conduit, and so that body fluid of the patient can flow between the lumen of the graft tissue conduit and the lumen of the body tissue conduit via the connection.

36. (Original) The connector defined in claim 35, wherein each of the first members of the first group has a barbed end portion for engaging tissue of the graft tissue conduit and tissue of the interior wall of the body tissue conduit.

37-53. (Cancelled)

54. (Original) Apparatus for producing a hollow anastomotic connection between a first aperture in a side wall defined by first and second ends of a graft tissue conduit and a second aperture in a side wall defined by first and second ends of a body tissue conduit in a patient, comprising:

a connector having a structure that is substantially annularly continuous but annularly enlargeable about its longitudinal axis, the structure including:

a first portion, wherein the first portion includes a plurality of first members extending away from the structure, wherein a distal perimeter is defined by at least a first group of the plurality of first members configured to engage the interior wall of the body tissue conduit about the second aperture, and wherein a second group of the plurality of first members is configured to engage the graft tissue conduit about the first aperture; and

a second portion proximal to the first group of first members, wherein a first spacing is defined between at least the first group of first members and the second portion, and wherein the structure is configured to expand from a deformed configuration having a collapsed distal perimeter to an expanded configuration having an expanded distal perimeter; and

a delivery tool having a first configuration and a second configuration, wherein the first configuration is configured for retaining a retainable portion of the connector

proximal to the first group of first members to deform the connector structure from the expanded configuration to the deformed configuration and to advance the collapsed distal perimeter of the connector into the lumen of the body tissue conduit via the second aperture, and wherein the second configuration is configured for releasing the retainable portion of the connector to reform the connector structure from the deformed configuration to the expanded configuration.

55. (Cancelled)

56. (New) The connector defined in claim 17, wherein the structure of the connector is configured for disposition such that the longitudinal axis of the structure is substantially perpendicular to the longitudinal axis of the tubular graft conduit and the longitudinal axis of the tubular body conduit.

57. (New) The apparatus defined in claim 54, wherein the structure of the connector is configured for disposition such that the longitudinal axis of the structure is substantially perpendicular to the longitudinal axis of the tubular graft conduit and the longitudinal axis of the tubular body conduit.